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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,988	12/13/2001	James M. Florence	SLA0354	7651

7590

07/28/2003

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EXAMINER

LAVARIAS, ARNEL C

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 07/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/021,988

Applicant(s)

FLORENCE, JAMES M. *mc*

Examiner

Arnel C. Lavarias

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendments to Claims 1, 9-10, 13, and 17 in Paper No. 4, dated 5/30/03, are acknowledged and accepted.
2. The addition of Claim 21 in Paper No. 4, dated 5/30/03, is acknowledged and accepted.

Response to Arguments

3. The Applicant argues that, with respect to newly amended Claim 10 and original Claims 15-16, King et al. fails to teach or reasonably suggest the polarized light beam splitter assembly including a polarized light beam splitter including an embedded wire grid polarizer having a wire grid including a raised surface, wherein the raised surface is in communication with an internal air gap. The Examiner respectfully disagrees. The wire grid polarizer of King et al. (See in particular Figure 2) comprises ridges (See 34 in Figure 2) that include raised surfaces that are higher above the base plate (See 36 in Figure 2) of the wire grid polarizer. Additionally, these ridges that include raised surfaces are in communication with an internal air gap (See spaces between 34 in Figure 2 when the structure in Figure 2 is incorporated as 26 in Figure 3, as previously noted).
4. The Applicant's arguments, see Pages 7-10 of Paper No. 4, filed 5/30/03, with respect to the rejections of newly amended Claims 1-9, 13, and 17-20 under 35 U.S.C. 103(a) have been fully considered. However, upon further consideration of the newly added

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limitations to the amended claims, a new ground of rejection is made in view of King et al. (U.S. Patent Application No. 2002/0101664A1), Perkins et al. (U.S. Patent No. 6288840), Yamada et al. (U.S. Patent No. 6013339), and Grinberg et al. (U.S. Patent No. 4688897).

5. Claims 1-21 are rejected as follows.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 10-12, 14, and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by King et al. (U.S. Patent Application No. 2002/0101664A1).

With regard to Claim 10-12, and 14, King et al. discloses a polarized light beam splitter assembly (See 20 in Figure 3) comprising a polarized light beam splitter prism (See 22 in Figure 3) including an embedded wire grid polarizer (See 26 in Figure 3; Figure 2) having a wire grid including a raised surface (See 34 in Figure 2), wherein the raised surface is in communication with an internal air gap (See spaces between 34 in Figure 2 when the structure in Figure 2 is incorporated as 26 in Figure 3); a light source (See 52 in Figure 3) positioned to emit light to the polarized light beam splitter; and a reflection device (See 50, 54, or 56 in Figure 3), such as a mirror or quarter wave plate,

positioned to receive light redirected by the polarized light beam splitter. King et al. additionally discloses the polarized light beam splitter defining an elongate axis (See axis defined either by 72 or 78 in Figure 3) and the internal air gap being positioned at an angle of approximately 45 degrees with respect to the elongate axis (Note that with respect to either elongate axis as defined, 26 lies on the long diagonal of the cube, and is thus at an angle of approximately 45 degrees from either elongate axis).

With regard to Claim 21, King et al. discloses a polarized light beam splitter device (See 20 in Figure 3; Figure 2) comprising a polarized light beam splitter (See 22 in Figure 3) including first (See surface referenced near 26 in Figure 3) and second (See surface just above 26 in Figure 3) sections that define an air gap (See air gaps between 34 in Figure 2) therebetween; and an embedded wire grid polarizer (See 26 in Figure 3; Figure 2) secured to the first section and with the air gap such that the wire grid polarizer is not in contact with the second section (The Examiner notes that the sections in the air gap between 34 in Figure 2 are not in contact with the section when the structure in Figure 2 is incorporated as 26 in Figure 3).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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9. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over King et al.

King et al. discloses the invention as set forth above in Claim 10, except for the air gap having a width in the range of one to thirty μm . It would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the width of the air gap to be in the range of one to thirty μm , since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. One would have been motivated to have the air gap have a width in the range of one to thirty μm for the purpose of reducing fabrication costs since larger air gap widths require a spacer with an appropriately larger thickness, while providing a controlled air gap spacing. *In re Aller*, 220 F.2d 618, 195 USPQ 6 (CCPA 1977). See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

10. Claims 1-9, 13, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over King et al. or Perkins et al. (U.S. Patent No. 6288840) in view of Grinberg et al. (U.S. Patent No. 4688897) and Yamada et al. (U.S. Patent No. 6013339).

King et al. discloses the invention as set forth above in Claims 10 and 21. Perkins et al. disclose a polarized light beam splitter assembly (See 100 in Figure 10), comprising a polarized light beam splitter prism (See two prisms in Figure 10); and a wire grid polarizer (See 61 in Figure 10). King et al. additionally discloses the polarized light beam splitter defining an elongate axis (See axis defined either by 63 or 65 in Figure 10) and the embedded wire grid polarizer being positioned at an angle of approximately 45

degrees with respect to the elongate axis (Note that with respect to either elongate axis as defined, 61 lies on the long diagonal of the cube, and is thus at an angle of approximately 45 degrees from either elongate axis). Both King et al. and Perkins et al. lack the wire grid polarizer being secured to an exposed internal surface of the beam splitter prism via a spacer so as to define a gap between a surface of the wire grid polarizer and the exposed internal surface of the beam splitter prism. However, Grinberg et al. teaches a liquid crystal device (See Figure 3) including a wire grid polarizer (See 24 in Figure 3; Figure 4; Abstract) wherein the wire grid polarizer is secured to an exposed internal surface (See internal surface of 12 and 16 in Figure 3) of the device so as to define a gap (See gap 11 where liquid crystal is to be placed in Figure 3) between a surface of the wire grid polarizer and the exposed internal surface of the device. Thus, the wire grid polarizer does not contact the exposed internal surface of the device. Yamada et al. additionally teaches that spacers may be used in the periphery of the device to attach the substrates together and to form the internal gap, and that the spacers may be in the form of rigid glass beads, all of uniform diameters to provide a gap of uniform thickness (See 2 in Figure 5; col. 10, lines 54-64). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the wire grid polarizer be secured to an exposed internal surface of the beam splitter prism via a spacer, such as a rectangular or spherical shaped spacer or a raised projection, so as to define a gap between a surface of the wire grid polarizer and the exposed internal surface of the beam splitter prism, as taught by both Grinberg et al. and Yamada et al., in the polarized light beam splitter assembly of either King et al. or Perkins et al. One would have been

motivated to do this to increase the amount of transmitted light through the device by reducing the number of optical elements, seal and protect the wire grid polarizer, as well as provide a uniform thickness spacing between the wire grid polarizer and the exposed internal surface of the beam splitter prism. Additionally, it is noted that the use of adhesives, such as optical epoxy and solder, for attaching optical components together is well known in the art. One would use adhesives to provide a permanent/semi-permanent bond between optical elements, the type of adhesive use being dependent on the particular application.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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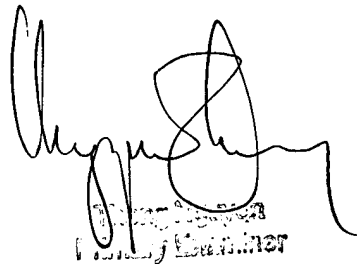
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 703-305-0024. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.



Arnel C. Lavarias
July 22, 2003



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